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U. S. DEPARTMENT OF AGRICULTURE

OFFICE OF EXPERIMENT STATIONS

A. W. HARRIS, DIRECTOR.
A. C. TRUE, ASSISTANT DIRECTOR.

Washington, D. C., May 12, 1892.

DEAR SIR:

The work of bringing together the collective college and station exhibits for the World's Columbian Exposition was divided into several parts by the two committees of the College and Station Association, one having charge of the college exhibit, the other of the station exhibit. In accordance with this division the Director of the Office of Experiment Stations has been requested to prepare the exhibit of the working laboratories. It is also hoped to arrange for a series of illustrated daily lectures in connection with the laboratories.

The space for the laboratories having been assigned and the exhibits of allied subjects in the alcoves having been ascertained in a general way, we are now able to mature definite plans for these laboratories and are anxious to do this as soon as possible.

The inclosed ground plan of the exhibit shows the location of the three laboratories provided for, viz, 1. Chemical, 2. Biological, 3. Botanical and Horticultural. Each laboratory will consist of two parts:

A. An exhibit designed for specialists:

- (a) A collection of new, original, or peculiar apparatus, shown in cases and explained by appropriate labels.
 - (b) The actual performance by specialists of new or peculiar operations illustrating new or original methods.
- In many cases the apparatus in (a) may be used.

B. An exhibit for the general public consisting of a series of simple illustrative operations.

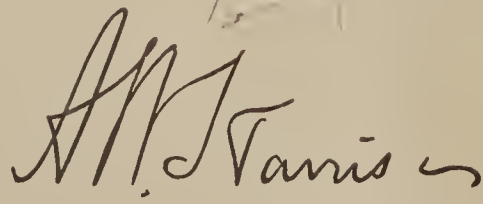
In **Exhibit A** the demonstrations may be made at different times for short periods, perhaps chiefly when the Congresses of station and college workers are in session. The loan of apparatus for this part of the exhibit need not necessarily be for all the time during which the Exposition will be open.

Exhibit B, upon which the greatest emphasis will be placed, is designed especially to reach farmers, students, and the intelligent public. It should not fail to leave an impression of the great practical usefulness of agricultural science. Simple and typical operations illustrating the kinds and methods of work undertaken in the college and station laboratories will be performed. It is desirable that these should be attractive in appearance and readily understood, and that they should deal as far as possible with familiar subjects. Demonstrators will be present for at least a part of each day to conduct and explain these operations. The stations are expected to detail men for this service. No one station will be asked to send a demonstrator for any great length of time, nor will attendance be required of operators at the exhibit for more than half of each day. The expenses of transportation and installation of the exhibits, and, so far as possible, a moderate allowance for the expenses of the demonstrators, will be paid out of the appropriation for the Government exhibit allotted to the Department of Agriculture.

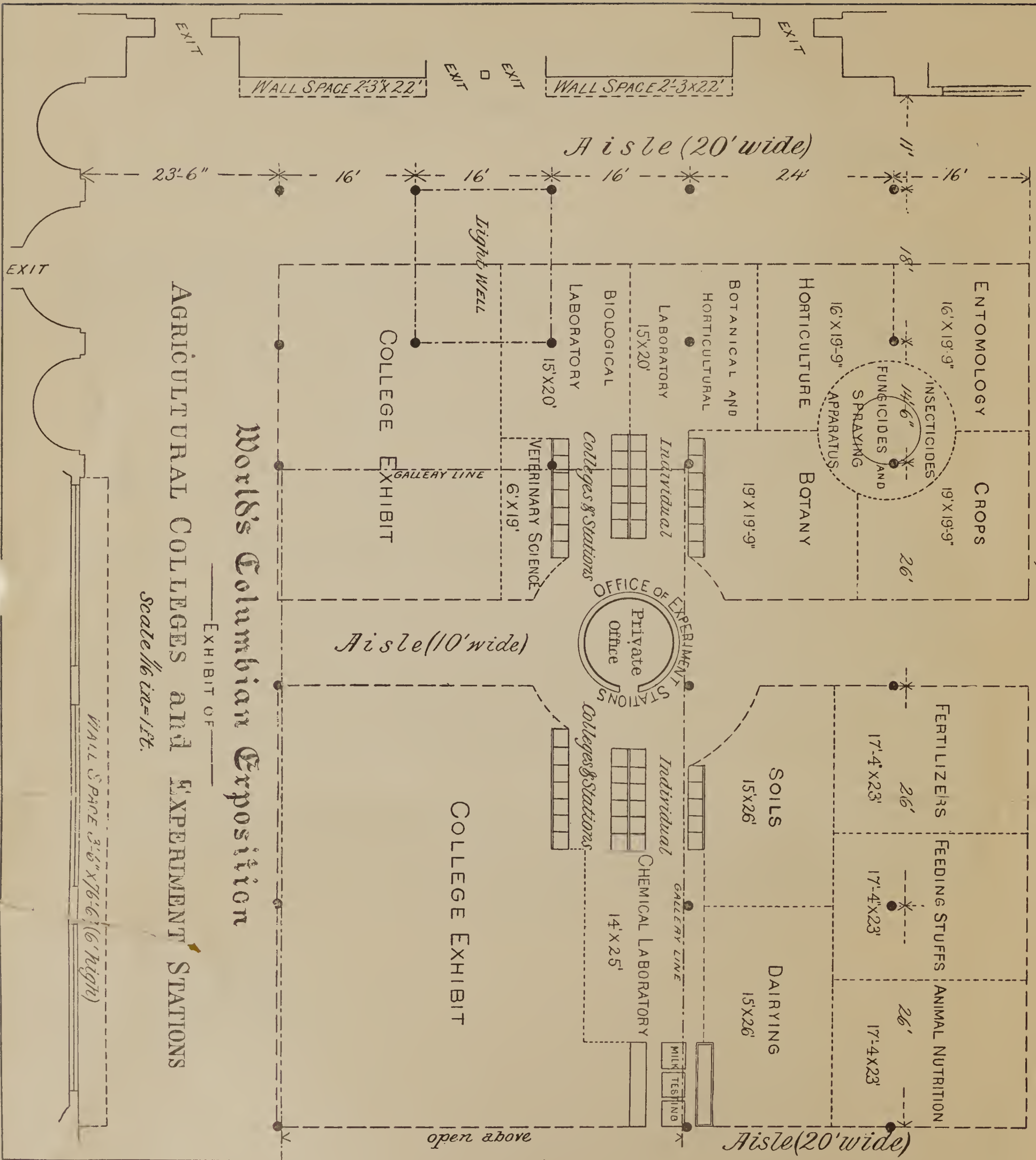
Attached will be found a list of some things it has seemed possible to show in Exhibit B. It should however be understood that in giving this list the aim is to call out suggestions from the colleges and stations and not to limit them. Of the things mentioned, there has been no attempt to decide how any should be shown if selected. Some may prove unsuited to our purpose; better ones doubtless will be suggested. They are therefore open to your comment and criticism. Credit will be given to each institution for apparatus and original processes exhibited.

You will oblige us as well as hasten this work by sending your suggestions as soon as possible.

Respectfully,



Director.



GENERAL TENTATIVE PLAN FOR LABORATORIES.

CHEMICAL LABORATORY.

EXHIBIT A.

- (a) New, original, or peculiar apparatus.
 - (b) Technical operations.
- What could your college or station contribute?

EXHIBIT B. Simple illustrative experiments, such as the following :

1. Analysis of fertilizers for—
 - (a) Phosphoric acid—soluble, reverted, and insoluble.
 - (b) Potash.
 - (c) Nitrogen by Kjeldahl and absolute methods.
2. Feeding stuffs, determination of—
 - (a) Fats.
 - (b) Cellulose.
 - (c) Albuminoid nitrogen.
3. Milk, butter, and cheese, determination of—
 - (a) Fat by gravimetric method.
 - (b) Solids.
4. Water, determination of—
 - (a) Free albuminoid ammonia.
 - (b) Chlorine.
 - (c) Hardness.

BIOLOGICAL LABORATORY.

EXHIBIT A.

- (a) New, original, or peculiar apparatus.
 - (b) Technical operations.
- What could your college or station contribute?

EXHIBIT B. Simple illustrative experiments, such as the following :

1. Investigations of bacteria in milk, butter, and cheese.
2. Oyster culture.
3. Capillary tube for isolating small organisms.
4. Classification and systematic study of insects.
5. Diseases of insects.
6. Microscopic study in entomological anatomy.

BOTANICAL AND HORTICULTURAL LABORATORY.

EXHIBIT A.

- (a) New, original, or peculiar apparatus.
 - (b) Technical processes.
- What could your college or station contribute?

EXHIBIT B. Simple illustrative experiments, such as the following :

1. Systematic botany :
 - (a) Identification of species.
 - (b) Microscopes and slides.
 - (c) Herbarium.
 - (d) Photographic work.
 - (e) Preparation of drawings.

2. Physiological botany :

- (a) Osmosis.
- (b) Root action ; Sachs's apparatus.
- (c) Water culture and sand culture.
- (d) Transpiration and evaporation ; Pfeffer's apparatus.
- (e) Growth ; auxanometer ; Clark's experiment.
- (f) Effects of light and heat.
- (g) Cross-fertilization and grafting.

3. Seed testing :

- (a) For purity.
- (b) For vitality.

4. Mycology :

- (a) Detecting diseases.
- (b) Culture tests.
- (c) Experiments in repression.

N. B.—In your answers the following points should be considered :

EXHIBIT A. *Technical apparatus and operations.*

- (a) 1. What contribution of apparatus could your college or station make ?
2. What desirable apparatus do you know of which might be contributed by others ?
- (b) 1. What special operations would you be able to exhibit ?
2. What special operations do you know of which you think desirable to be shown by other colleges or stations ?

EXHIBIT B. *Simple illustrative operations.*

What experiments, if any, included in the above list of suggestions for exhibit B could your college or station exhibit, and what other experiments would you suggest for exhibition by your own or other institutions ?

Information on any point relating to the exhibit is desired. In asking for your prompt and cordial assistance, it can not be too strongly emphasized that the success of this exhibit depends upon the enthusiasm and coöperation of the colleges and stations.